

```
1 // BlankConsoleLab.cpp : This file contains the 'main' function. Program execution begins and ends there.
2 //
3
4 #include <iostream>
5
6 using namespace std;
7
8 using std::cout;
9 using std::cin;
10 using std::endl;
11
12 int main()
13 {
14     float width;
15     float length;
16     float area;
17     float mass;
18     float aspect_ratio;
19     float grav_pull;
20     bool isStable = false;
21     bool range = false;
22
23
24     while (isStable == false) {
25
26         // prompt user for width and length input, then store into appropriate variables
27         while (range == false) {
28
29             cout << "Enter width (In centimeters): " << endl;
30             cin >> width;
31             cout << "Enter length (In centimeters): " << endl;
32             cin >> length;
33             // loops only if the width and length are not between 1 and 400
34             if (width > 400 || length > 400 || width < 1 || length < 1) {
35                 cout << "Please keep the width and length between 1 and 400 centimeters" << endl;
36             }
37
38             else {
39                 range = true;
40                 break;
41             }
42         }
43
44
45         // display the entered values back to the user
46         cout << "You entered: " << width << " cm for width, and: " <<
```

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length << " cm for length" << endl;
47
48 // compute and display the area
49 area = ((width * length) / 2) / 10000;
50 cout << "The area for your kite is: " << area << " square meters"
    << endl;
51
52 //compute the aspect ratio and prompt user with warning if
    condition not met
53 aspect_ratio = (width / length);
54
55 //compute the mass of the kite by multiplying the area, fabric
    weight, and converting to kg
56 mass = (area * 135) / 1000;
57 cout << "The mass of your kite is: " << mass << " kg" << endl;
58
59 //compute the gravitational pull of the kite by multiplying the mass
    by the acceleration due to gravity
60 grav_pull = mass * 9.8;
61 cout << "The gravitational pull of your kite is: " << grav_pull << "
    Newtons" << endl;
62 //Warns if aspect ratio is too high and causes instability
63 if (aspect_ratio >= 1) {
64     cout << "Warning, an aspect ratio of: " << aspect_ratio << " is
        too high and will provide instability" << endl;
65     range = false;
66
67 }
68 // otherwise break out successfully
69 else {
70     cout << "Aspect Ratio: " << aspect_ratio << endl;
71     isStable = true;
72     break;
73 }
74
75
76
77 }
78
79
80
81 }
82
83
```